

Appln. No.: 10/782,097  
Amendment Dated December 26, 2006  
Reply to Office Action of October 5, 2006

MAT-8510US

**Amendments to the Drawings:**

The attached sheets of drawings include changes to Figures 1, 4, 5 and 6. These sheets replace the original sheets.

**Remarks/Arguments:**

Applicants' disclosure is directed to a digital signal transceiver. The transceiver includes a frequency modulator. The frequency modulator includes a variable frequency oscillator and a frequency divider unit. The frequency divider unit switches between a modulating frequency divider and a non-modulating frequency divider. In this way, the frequency modulator outputs either a modulated signal or a non-modulated signal.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Applicants' admission of prior art. It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Applicants' admission of prior art, as depicted in Applicants' Fig. 5, is directed toward a digital signal transceiver. The transceiver includes frequency modulator 61. Frequency modulator 61 has input port 61b for receiving a modulating signal. Frequency modulator 61 always outputs a modulated signal. (See Fig. 5; page 4, lines 3-6; page 6, lines 10-13.) Applicants' invention, as recited by claim 1, includes a feature which is neither disclosed nor suggested by the art of record, namely:

a first frequency divider unit that switches between a modulating frequency divider and a non-modulating frequency divider, the non-modulating frequency divider...outputting the non-modulated signal, and the modulating frequency divider...outputting the modulated signal (emphasis added).

In the exemplary embodiment described in Applicants' specification, this means that Applicants' frequency modulator switches between frequency dividers. One frequency divider outputs a modulated signal. The other frequency divider outputs a non-modulated signal. In this way, Applicants' frequency modulator is capable of outputting either a non-modulated signal or a modulated signal. This feature is found in the originally filed application at page 9, lines 20-21; page 9, line 27 through page 10, line 3; page 10, lines 12-15; page 11, lines 21-27; page 12, lines 3-6; and Fig. 2. No new matter has been added.

Applicants' admission of prior art describes a frequency modulator that always receives a modulating signal and always outputs a modulated signal. Applicants' admitted prior art does not disclose a switching mechanism that switches between a modulating frequency divider and a non-modulating frequency divider. Further, Applicants' admission of prior art does not describe prior art that has a frequency modulator that is capable of outputting either a frequency modulated signal or a non-modulated signal. Applicants' admitted prior art always outputs a modulated signal.

This is different because Applicants' frequency modulator has a switching mechanism that switches between a modulating frequency divider and a non-modulating frequency divider. The switching mechanism and the frequency dividers allow the frequency modulator to output either a frequency modulated signal or a non-modulated signal. The prior art describes no such switch and no such frequency dividers. The prior art frequency modulator always outputs a modulated signal.

It is because Applicant includes the feature of a first frequency divider unit that switches between a modulating frequency divider and a non-modulating frequency divider, the non-modulating frequency divider...outputting the non-modulated signal, and the modulating frequency divider...outputting the modulated signal, that the following advantages are achieved. Applicants' transceiver uses the same variable frequency oscillator in transmitting and receiving modes, thus reducing cost. At the same time, Applicants' frequency modulator modulates the signal output from the frequency modulator only when necessary. Therefore, for example, this eliminates a phase noise generated by the frequency modulator responding to a modulated signal at least in the receiving mode.

Claims 2-7 and new claim 15 include all the features of claim 1 from which they depend. Thus, claims 2-7 and 15 are also patentable over the art of record for the reasons set forth above.

Claims 3-6, 8-10, 12 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admission of prior art in view of Clementi (U.S. Patent

Number 6,294,936 B1). It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Clementi is directed toward phase-locked (PLL) circuit 12. The PLL circuit includes: variable frequency oscillator 22 used for generating a reference signal; frequency divider 24 for frequency dividing the reference signal; frequency divider 26 in a feedback circuit for frequency dividing the feedback signal; comparator 34; and charge pump 30. (See Fig. 2.) Applicants' invention, as recited by claim 8, includes a feature which is neither disclosed nor suggested by the art of record, namely:

a first frequency divider unit that switches between a modulating frequency divider and a non-modulating frequency divider, the non-modulating frequency divider...outputting the non-modulated signal, and the modulating frequency divider...outputting the modulated signal (emphasis added).

In the exemplary embodiment described in Applicants' specification, this means that Applicants' frequency modulator switches between frequency dividers. One frequency divider outputs a modulated signal. The other frequency divider outputs a non-modulated signal. In this way, Applicants' frequency modulator is capable of outputting either a non-modulated signal or a modulated signal. This feature is found in the originally filed application at page 9, lines 20-21; page 9, line 27 through page 10, line 3; page 10, lines 12-15; page 11, lines 21-27; page 12, lines 3-6; and Fig. 2. No new matter has been added.

Clementi discloses only one frequency divider in its feedback circuit. Therefore, there is no need for a switching mechanism.

This is different because Applicants' transceiver has a frequency modulator that switches between two frequency dividers. One frequency divider outputs a modulated signal. A second frequency divider outputs a non-modulated signal. On the other hand, Clementi only discloses one frequency divider in its feedback circuit. Clementi's frequency

divider outputs a non-modulated signal. Further, Clementi does not disclose a switching mechanism for switching between two frequency dividers.

It is because Applicant includes the feature of a first frequency divider unit that switches between a modulating frequency divider and a non-modulating frequency divider, the non-modulating frequency divider...outputting the non-modulated signal, and the modulating frequency divider...outputting the modulated signal, that the following advantages are achieved. Applicants' transceiver can use the same variable frequency oscillator in transmitting and receiving modes, thus reducing cost. At the same time, Applicants' frequency modulator modulates the signal output from the frequency modulator only when necessary. Therefore, for example, this eliminates phase noise generated by the frequency modulator responding to a modulated signal at least in the receiving mode.

Claims 9-11 include all the features of claim 8 from which they depend. Thus claims 9-11 are patentable over the art of record for the reasons set forth above.

Claims 12 and 14, while not identical to claim 1 or 8, include feature similar to claims 12 and 14. Accordingly, claims 12 and 14 are patentable over the art of record for the reasons set forth above.

Claim 13 includes all the features of claim 12 from which it depends. Thus claim 13 is patentable over the art of record for the reasons set forth above.

Amendments were made to the specification in accordance with Examiner's recommendations.

With regard to the objections to claim 12 at paragraph 7 of the Office Action, the language "the variable frequency oscillator" has been changed to "the voltage controlled oscillator." The other changes were made according to Examiner's suggestions as required.

The drawings were amended in accordance with Examiner's recommendation.

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In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,



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LEA/dmw

Attachments: Figures 1, 4, 5 and 6 (4 sheets)

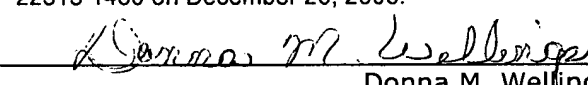
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